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FOREST INSECT CONDITIONS
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COVER PHOTO

Forest insects of economic importance in the Northern Region. Beginning at upper left and proceeding clockwise: Engelmann spruce cone infested by the spruce budworm; galleries of the engraver beetle, *Ips calligraphus* (Germar) in ponderosa pine; Engelmann spruce terminal killed by white pine weevils; egg mass of a pine looper, *Phaeoura mexicanaria*, on ponderosa pine foliage; adult larch casebearer; larvae and galleries of the mountain pine beetle; larva of the spruce budworm; pine butterfly pupae.

FOREST INSECT CONDITIONS - 1971
NORTHERN REGION[1/]

by

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INTRODUCTION

Forests of the Northern Region are damaged by a wide variety of destructive insects. Bark beetles cause tree mortality which reduces the productivity of timbered sites. Defoliating insects remove foliage which causes growth loss, top kill, mortality, and ultimately lengthens rotation periods. Defoliators may also impair scenic values and effect the amount of browse available for game species. Shoot and stem borers cause deformities which result in reduced quality of the timber resources; and seed and cone insects destroy seed crops essential for reforesting logged or burned-over areas.

Entomologists assigned to the Northern Region headquarters in Missoula, Montana, are charged with evaluating losses caused by these destructive pests. Aerial and ground surveys are made annually of forested areas to discover new problem areas and monitor existing outbreaks. Biological evaluations and impact surveys are made to provide the necessary ecological and economic inputs for sound control decisions. Technical assistance is provided to resource managers to suppress outbreaks in such a manner as to achieve maximum effectiveness with little or no adverse impact on other resources.

The purpose of this report is to summarize the status of important forest insects in the Region and highlight significant progress made in combating these pests.

PROGRAM HIGHLIGHTS

A number of studies and evaluations were conducted in 1971 which resulted in significant improvements in survey and evaluation methodology. These included:

1. Development of prediction models for two forest defoliators: the larch casebearer and the pine butterfly.

1/ Includes forested lands in Montana, northeastern Washington, northern Idaho, North Dakota, northwestern South Dakota, and National Park Service land in northwestern Wyoming.

2. Adaptation of the Division of Timber Management ADP "Sale Cruise" program to bark beetle impact and presuppression surveys.

3. Use of a double sampling system using color aerial photographs and ground plots to estimate losses caused by the Douglas-fir beetle.

4. Studies on the within-tree distribution of native and introduced parasites of the larch casebearer.

In addition, another pilot control test was conducted using the carbamate insecticide Zectran to suppress the western spruce budworm. This test was conducted in the mixed Douglas-fir - grand fir forests of the Nezperce National Forest in Idaho. The objectives of this test were to:

1. Test the strategy of applying Zectran FS-15 as registered by EPA to protect resource values until natural factors suppress the infestation.

2. Evaluate the effectiveness of Zectran in reducing budworm populations in the mixed conifer forests of northern Idaho.

3. Obtain additional data on the impact of Zectran on spruce budworm parasites.

Three spray blocks comprising 2,000 to 3,000 acres each were treated. Population reduction averaged 28 to 60 percent in the treated areas. Reasons for low mortality are believed to be relatively low spray deposits and an abundance of lush foliage on host trees which protected larvae from the spray.

Entomologists associated with the forest insect section entered the computer age in 1971, largely due to the installation of a GE-440 time share computer terminal in Missoula. Data are fed to the computer located in Atlanta, Georgia, via telephone lines by a teletype unit (Figure 1). The availability of this system made possible rapid, accurate analysis of large volumes of data used in developing prediction models and in computing survey, evaluation, and pilot test data. In addition, Batch-mode ADP facilities previously available were used to analyze ground survey data collected to measure the impact of epidemic mountain pine beetle infestations in a number of areas throughout the Region.

Figure 1.--Feeding forest insect survey data into time share computer terminal.

CONDITIONS IN BRIEF

Western spruce budworm damaged 4.25 million acres of Douglas-fir, spruce, and true fir forests in western Montana and northern Idaho. Infestations continued to increase and spread northward in forested areas west of the Continental Divide. Defoliation also increased in intensity in several areas east of the Continental Divide where populations have been on a downward trend for several years. The larch casebearer completed its invasion of the western larch type in the Region--all stands are now infested. Heavy larch casebearer defoliation occurred at the lower elevations in northeastern Washington and northern Idaho.

Mountain pine beetle infestations continued in western white pine stands on the Kaniksu and Flathead National Forests, and new infestations were detected on the Colville National Forest in Washington. The massive mountain pine beetle outbreak in lodgepole pine stands in Yellowstone National Park, Wyoming, spread northward and caused extensive tree mortality. Infestations continued on the Gallatin and Lolo National Forests in Montana. Activity by the Douglas-fir beetle increased significantly with a massive infestation occurring on lands of mixed ownership in the North Fork Clearwater River drainage in Idaho. Pine engraver infestations occur in ponderosa pine stands near Missoula, Montana. Spruce beetle and fir engraver populations continued to decline.

The Douglas-fir tussock moth defoliated shade trees in residential areas of Coeur d'Alene, Idaho, and is apparently building up in a number of isolated areas in the Region. The pine butterfly caused noticeable feeding damage on the Nezperce National Forest, Idaho, and the Bitterroot National Forest in Montana. Infestations are expected to increase next year. A 2-year-old infestation of pine looper collapsed due to disease, but new areas of defoliation were detected in southeastern Montana. The variable oak leaf caterpillar and the forest tent caterpillar defoliated hardwood forests in North Dakota.

CONIFEROUS DEFOLIATORS

WESTERN SPRUCE BUDWORM, *Choristoneura occidentalis* Free.--For the fourth consecutive year aerially visible defoliation by western spruce budworm exceeded 4 million acres in the Region. Defoliation of less than 25 percent cannot be seen from the air so the total acreage of Douglas-fir, true fir, and spruce forests infested with budworm would greatly exceed this figure. Defoliation occurred on 10 National Forests, Yellowstone National Park, and the Flathead Indian Reservation (Table 1) (Figure 2).

The intensity and acreage of infestation increased on several forests west of the Continental Divide in western Montana and northern Idaho. A total of 1.3 million acres were damaged on the Nezperce National Forest, the highest for any Forest in the Region, and epicenters of defoliation enlarged on the Clearwater and St. Joe National Forests in Idaho. Western spruce budworm defoliation increased considerably on the Flathead Indian Reservation and the Lolo and Flathead National Forests in Montana. The area of infestation spread northward in Montana with isolated pockets of damage occurring on subalpine fir north of Hungry Horse Reservoir on the Flathead National Forest. Infestations continued to decline on the Bitterroot National Forest, where only 175,000 acres of noticeable defoliation occurred in 1971.

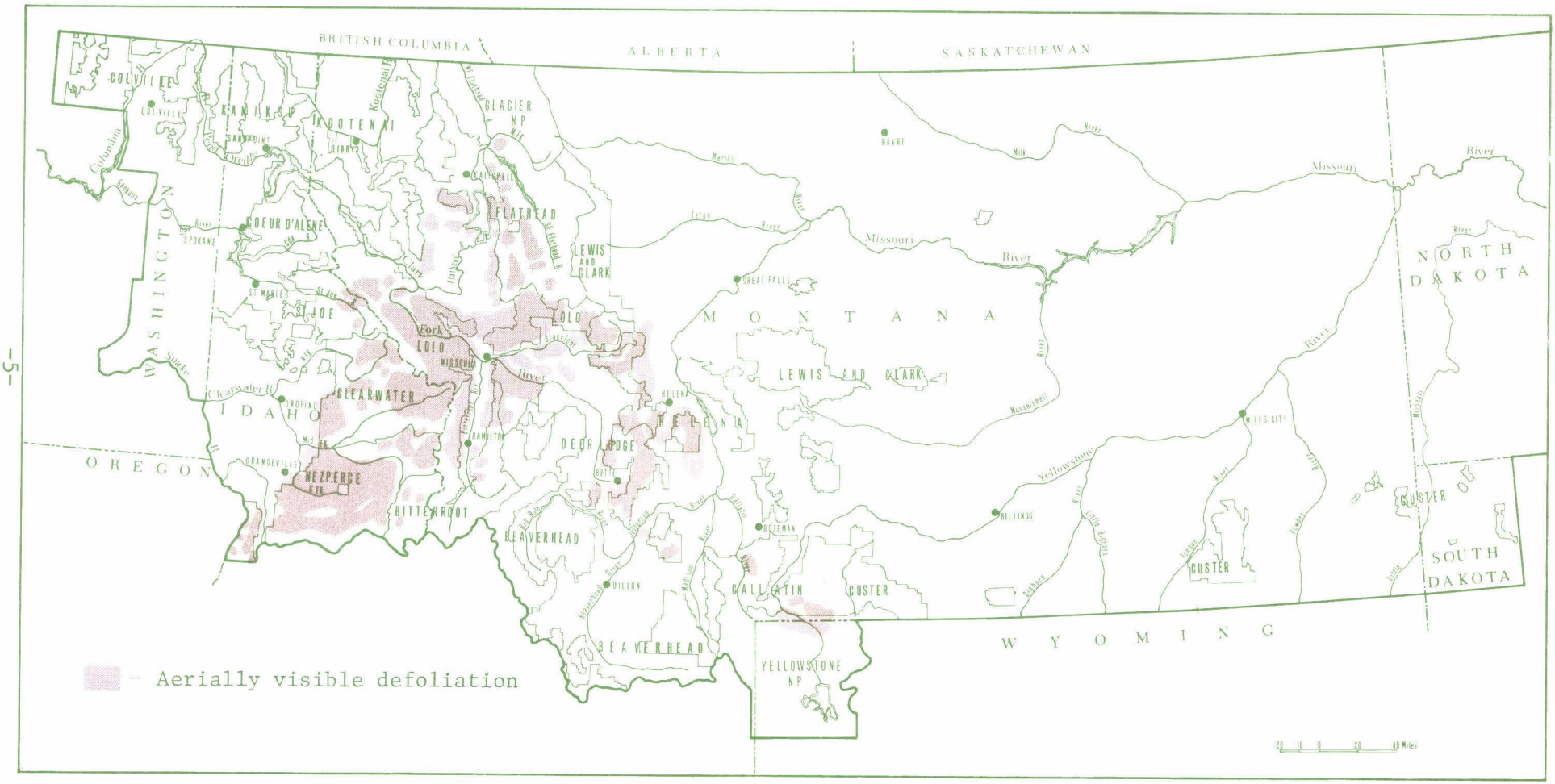

Figure 2.--Aerially visible defoliation by western spruce budworm - 1971.

Table 1.--Acreage of aerially visible budworm defoliation in Region 1 during 1971.

Unit	Acres defoliated
Idaho	
Nezperce National Forest	1,337,000
Clearwater National Forest	378,000
St. Joe National Forest	42,500
Montana	
Lolo National Forest	1,260,000
Helena National Forest	337,280
Deerlodge National Forest	285,680
Flathead Indian Reservation	194,000
Bitterroot National Forest1/	175,000
Flathead National Forest	167,000
Yellowstone National Park	46,080
Gallatin National Forest	15,260
Beaverhead National Forest	15,000
TOTAL	4,252,800

1/ Also includes a portion of Idaho.

In recent years, the Region has experienced a gradual decline of western spruce budworm defoliation in Douglas-fir forests east of the Continental Divide. This trend was broken in 1971 when an increase in defoliation was detected on portions of the Gallatin and Helena National Forests and Yellowstone National Park. Intensity of defoliation is expected to increase in 1972.

LARCH CASEBEARER, *Coleophora laricella* (Hbn.).--The larch casebearer continued its spread throughout the western larch forests of western Montana and northern Idaho and invaded the few remaining uninfested stands in the North Fork of the Flathead River and Glacier National Park in 1971. All of the western larch type in the Region is now infested.

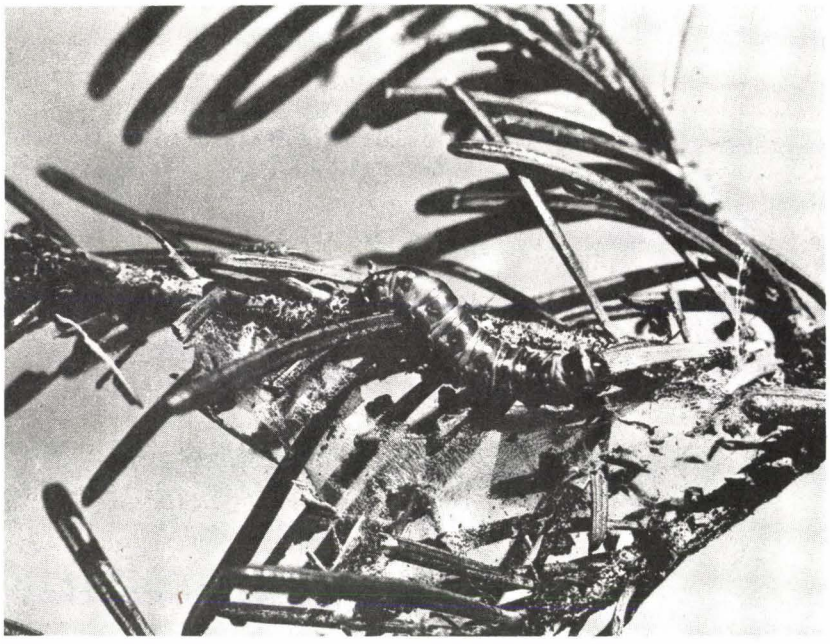

Figure 3.--Larva of the western spruce budworm *Choristoneura occidentalis* Free.

Infestations intensified in northern Idaho after a decline of several years. Most western larch stands occurring at lower elevations on the Kaniksu, Coeur d'Alene, and St. Joe National Forests suffered moderate to heavy feeding injury. Heavy defoliation also occurred on the Colville National Forest in northeastern Washington. Infestations remained at low levels in Montana with most larch stands suffering light to negligible defoliation except in the vicinity of Flathead Lake and along the Idaho border where moderate levels of feeding injury occurred.

A linear regression model was developed for predicting larch casebearer defoliation based on systematic counts of overwintering casebearer larvae. A series of 4 permanent plots of 10 western larch each were established throughout the western larch type during the winter of 1970-71. Branch samples were removed from the trees and the number of overwintering casebearer larvae per 100 spur shoots was determined for each plot. Defoliation was classified the following spring using a simple matrix of crown level and defoliation intensity. Correlation coefficient (r) for the two variables, overwintering larvae and defoliation, was 0.881.

Evaluation of native and introduced parasites of the larch casebearer continued in 1971. In addition to the introduced parasite, *Agathis pumila* (Ratz.), a total of 19 species of hymenopterous parasites have been recovered and identified. The most commonly occurring are *Dicladocerus* sp. near *westwoodii* Westwood and *Spilochalcis albifrons* (Walsh).

An evaluation was initiated in 1971 to determine the within-tree distribution of parasites of the larch casebearer. Parasitism by *A. pumila* was highest in the upper third of the crown. *D. westwoodii* was most abundant on the inner branch portion of all three crown levels. *S. albifrons* parasitized a higher proportion of larch casebearer pupae on the outer portions of limbs in the lower crown. Parasitism by *Mesopolobus* was uniform throughout the crown (Figure 4).

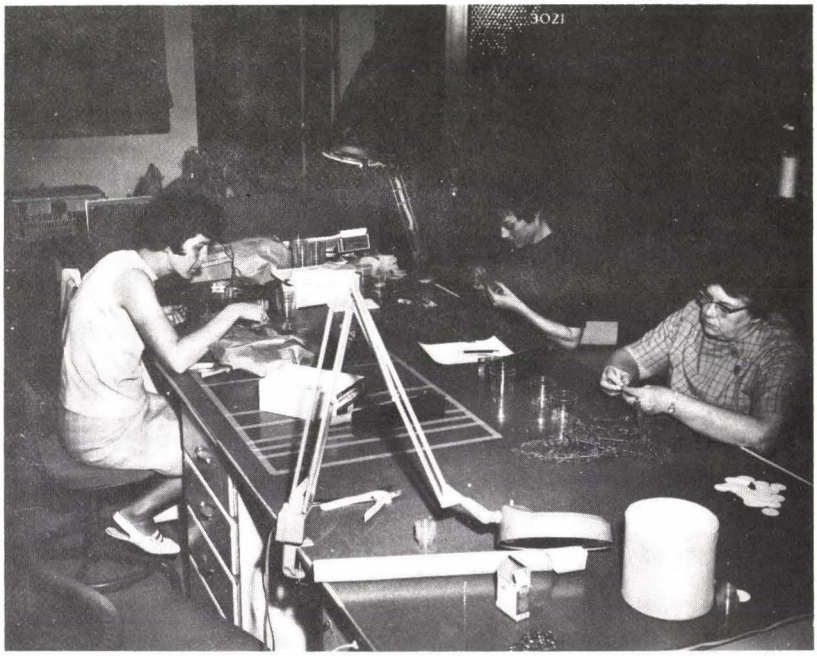

Figure 4.--Laboratory technicians removing parasitized larch casebearer pupae from foliage.

DOUGLAS-FIR TUSSOCK MOTH, *Hemerocampa pseudotsugata* McD.--Damage by this pest is cyclic in the Northern Region. The last epidemic collapsed in 1965 and populations were not detected again until 1970. In 1971, ornamental spruce and grand fir trees were defoliated in Missoula and Polson, Montana; Coeur d'Alene, Idaho; and Spokane, Washington. History shows that tussock moth infestations first appear around homes and farm woodlots, with forested areas becoming infested several years later. The present situation may be the start of another outbreak.

PINE BUTTERFLY, *Neophasia menapia* (Felder and Felder), increased notably throughout the Region. Defoliation occurred on a number of separate areas totaling 4,600 acres of ponderosa pine stands on the Bitterroot National Forest and adjoining private lands in western Montana. An additional 4,200 acres of ponderosa pine suffered heavy defoliation along the Salmon River, Nezperce National Forest, Idaho. Flights of adult butterflies were reported from numerous locations including residential areas of Spokane, Washington; Elk City, Idaho; and Missoula and Lincoln, Montana. Egg mass surveys on the Bitterroot National Forest indicate that an increase in pine butterfly activity can be expected in 1972. A simple linear regression model using number of eggs per 5-inch branch tip as the dependent variable was developed to predict defoliation potential by this insect.

PINE LOOPER, *Phaeoura mexicanaria* (Grote).--Infestations on the Northern Cheyenne Indian Reservation and Ashland District, Custer National Forest, collapsed in 1970 primarily due to a bacterial disease.

A new infestation was detected in August in the Ekalaka Hills and Longpine Mountains of the Sioux District, Custer National Forest, in the extreme southeastern corner of Montana. Larvae were found on about 15,000 acres of ponderosa pine. Approximately 4,000 acres were defoliated intensely enough to be visible from the air. The parasitic wasp, *Ichneumon pulcherior* (Hein.) was abundant in the infested area. It appears the looper population has collapsed due to a disease; by early September very few active loopers could be found. A pathogen recovered from diseased larvae was identified as a bacterium distinct from the one identified in 1970. Perhaps this is a more virulent bacterium because it caused a collapse of this infestation the same year it reached epidemic levels; whereas the infestation on the Ashland District and Northern Cheyenne Indian Reservation persisted 2 years before collapsing.

BARK BEETLES

MOUNTAIN PINE BEETLE, *Dendroctonus ponderosae* (Hopk.).--The long-standing mountain pine beetle infestation continues in mature and overmature western white pine stands in Lightning Creek, Kaniksu National Forest, Idaho. Approximately 6 million board feet of white pine were killed in 1970 and 6.9 million in 1971. Salvage logging of infested and dead trees is continuing to recover some of the loss.

The Lightning Creek infestation moved northeasterly into white pine stands in Callaham Creek, Troy District, Kootenai National Forest, Montana. New infestations were also detected in Big Creek and Pete Creek on the Sylvanite and Eureka Ranger Districts of the Kootenai National Forest.

Groups of 1970 white pine faders containing 2 to 50 trees per group were detected north of Bead Lake on the Kaniksu National Forest in Idaho.

Two localized mountain pine beetle infestations were detected in western white pine stands on the Colville National Forest in Washington; one is located in the South Fork River and the other occurs in Gypsy Creek. Mountain pine beetle infestations are still active in overmature western white pine stands near Hungry Horse Reservoir on the Flathead National Forest, Montana, but at lower levels than in 1970.

Epidemic mountain pine beetle populations continue to deplete white pine stands on private lands in the North Fork of the Clearwater River, Idaho. Infestations appear to have decreased in intensity in stands on the Clearwater National Forest, Idaho.

Mountain pine beetle infestations continue unabated in overstocked ponderosa pine stands on the Ninemile District, Lolo National Forest, and on adjoining State and private ownership lands in Montana. New attacks occur from Six Mile Creek northwest to Kennedy Creek. Commercial and precommercial thinnings are planned in 1972 to reduce stand susceptibility to beetle attack.

The mountain pine beetle - pine engraver *Ips pini* (Say) infestation at Four Mile Flat near St. Regis, Montana, appears to have decreased within older infestation centers. However, several hundred lodgepole pines were attacked in 1971 on adjacent State of Montana and private lands. Group attacks occur throughout Mill Gulch; and along the Clark Fork River from St. Regis to Fourteen Mile Creek. New group kills were detected this year in the West Fork of Big Creek near Savenac, and in Two Mile, Little Joe, and Ward Creek drainages.

Approximately 200 to 300 ponderosa pines were killed on private lands in Johnson Creek and Sawmill Gulch northwest of Missoula. Fifteen groups of ponderosa pine faders, varying from 3 to 50 trees per group occur on lands of Anaconda Forest Products, Inc., and on private ownership scattered between Milltown, Montana, and Clearwater Junction in the Blackfoot River drainage east of Missoula.

Losses continued for the second successive year in lodgepole pine stands in Logger, Hellroaring, Squaw, Swan, Portal, and Dudley Creeks, and in the West Fork drainage of the Gallatin River, Gallatin National Forest, southwest of Bozeman, Montana. Felling, handpiling, and burning of 1970 infested trees did little to reduce infestation levels in Hellroaring and Logger Creeks. Current year's attacks were found in all areas examined. A new outbreak was detected on the Hebgen Lake District of the Gallatin National Forest near West Yellowstone, Montana.

A massive infestation in Yellowstone National Park spread north across the Pitchstone Plateau, along the west boundary of the Park to the Montana-Idaho line, northeast to Geyser Basin, and east to the southeast arm of Yellowstone Lake. The infestation now encompasses over 450,000 acres of lodgepole and whitebark pine stands. Ground surveys show approximately 35.8 trees per acre were attacked in 1971, with some stands having as many as 63 trees killed per acre in 1971. Damage is expected to continue at the same level through 1972.

Approximately 2,600 infested lodgepole and ponderosa pines were felled, handpiled and burned, or removed by commercial sale in Park and Liverpool Creeks, and Lincoln Gulch on the Helena National Forest near Lincoln, Montana. Control action appears to have significantly reduced the number of 1971 attacks on National Forest lands. Intensive ground surveys show approximately 979 lodgepole and ponderosa pines were attacked in 1971 on 740 acres in Liverpool and Park Creeks. A total of 46,532 board feet of timber is currently infested. Numerous new attacks occur on adjacent State and private lands. Suppression by felling, handpiling and burning is planned to reduce infestations on National Forest lands.

Approximately 400 to 500 ponderosa pines have been killed annually during the past 4 years in Grizzly Gulch south of Helena, Montana, Helena National Forest. Evaluations indicate the infestations might be declining.

Results of impact surveys conducted on mountain pine beetle infestations throughout the Region are summarized in Table 2.

Table 2.--Summary of losses caused by mountain pine beetle in several outbreak areas in the Northern Region--1971

Forest	District	Acres surveyed	1971 attacks				
			Host	Trees /acre	Volume /acre bd. ft.	Total trees killed	Volume killed bd. ft.
Helena	Lincoln	740	PP	0.8	34	625	25,097
			LP	.5	29	354	21,435
Gallatin	Gallatin	1,639	LP	5.0	505	8,155	827,663
	Adj. private lands	425	LP	8.3	684	3,548	290,831
Kaniksu	Clark Fork	1,054	WP	.2	86	188	90,828
Yellowstone National Park		20,340	LP	35.8	1,810	727,500	36,805,521

DOUGLAS-FIR BEETLE, *Dendroctonus pseudotsugae* Hopk.--Douglas-fir beetle infestations increased markedly during 1971. The most severe outbreak encompasses 288,000 acres of mixed ownership including the State of Idaho, Bureau of Land Management, Potlatch Forests, Inc., and Clearwater and St. Joe National Forests in the North Fork of the Clearwater River in Idaho (Figure 6). A cooperative aerial photo-ground survey revealed that 34,640 MBF of Douglas-fir sawtimber was destroyed by this insect in 1970 and an additional 51,195 MBF was killed in 1971 (Figure 7). A coordinated salvage effort involving the Forest Service and other Federal agencies, the Idaho Department of Public Lands, and private industry is currently underway.

An extensive Douglas-fir beetle infestation was detected in the South Fork drainage of the Clearwater River, Nezperce National Forest, Idaho. Groups of infested trees occur over a gross area of about 17,000 acres from Cotter Bar east to Hungry Ridge, south to Grouse Ridge. "Hotspot" infestations are present on the Salmon Mountain-Grangeville cutoff road, Lightning Creek south, and east to Huddelson's Bluff.

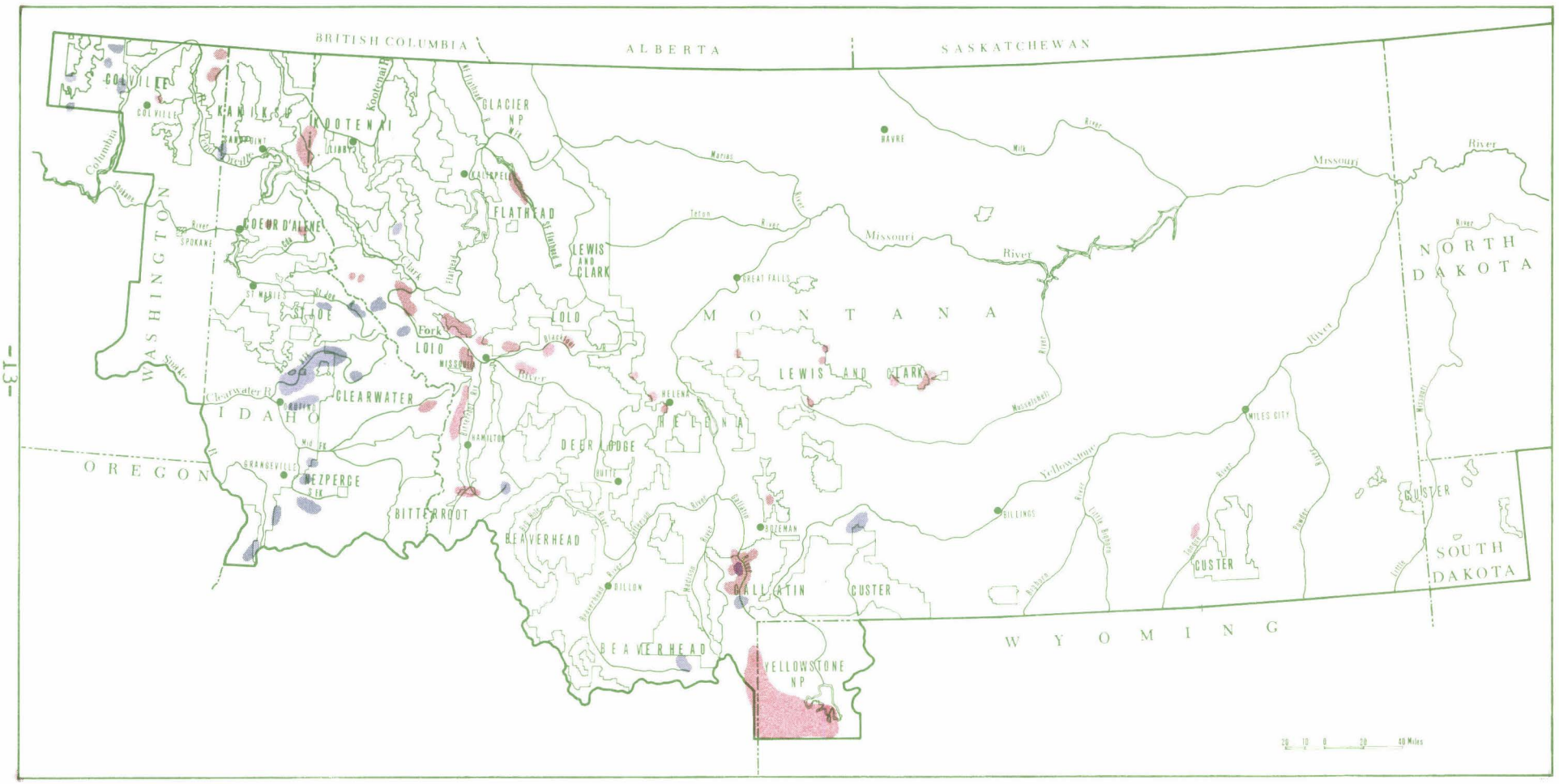

Figure 5.--Location of major bark beetle infestations in the Northern Region - 1971.

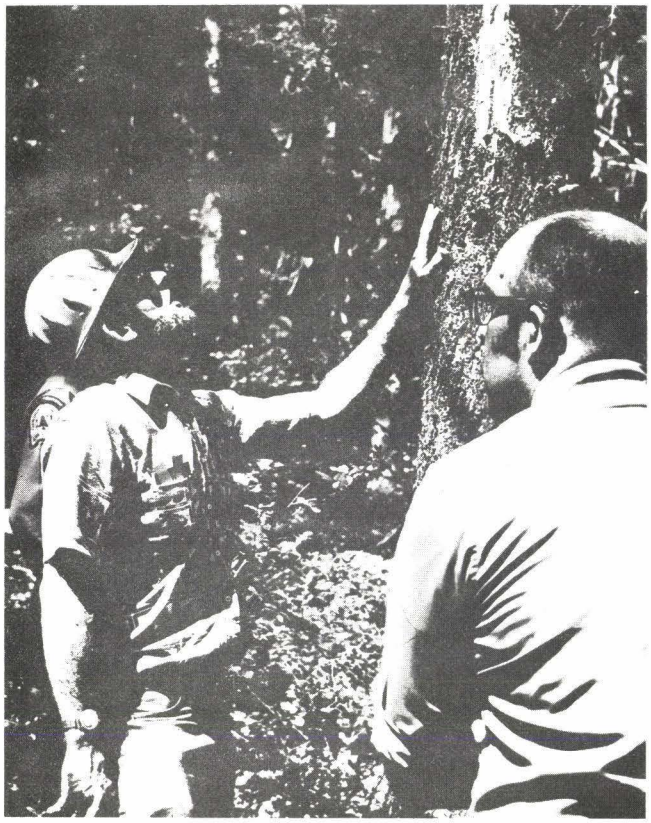

Figure 6.--Entomologist and foresters examining Douglas-fir infested by Douglas-fir beetle North Fork Clearwater River, Idaho.

Figure 7.--Photo interpreter examining color infrared photographs of Douglas-fir beetle infestations.

Severe winds during 1970 resulted in extensive blowdown of approximately 1.5 million board feet of sawtimber on 6,000 acres of the Canyon Ferry Ranger District, Helena National Forest, in 1970. An additional 1,500 acres of blowdown occurred on adjacent private lands. Sufficient down material is present to provide host material for a population buildup of Douglas-fir beetle. Salvage logging has been recommended to remove infested material and prevent green stands from being attacked in late spring of 1972.

Douglas-fir beetle activity increased in the upper West Fork of Steamboat Creek, Freeman Eddy, Teddy Creek, and Dry Creek near Devil's Elbow on the Coeur d'Alene National Forest, Idaho. Numerous scattered 1970 faders were also observed from Fourth of July Summit to Wall Peak.

New infestations varying from 3 to 10 trees per group occurred in Buck and Cow Creek drainages on the Troy Ranger District, Kootenai National Forest, Montana. A total of 25 groups of faders containing 2 to 50 trees per group were detected near Bead Lake, Kaniksu National Forest, Idaho.

Infestations active for the past several years appear to have declined in the lower Rock Creek drainage east of Missoula on the Lolo National Forest. Ground examinations show a potential for increased activity is present in Two Mile, Little Joe, and Ward Creek drainages on the Superior District, and in Meadow and Dry Gulches of the Thompson River District on the Lolo National Forest. Increased activity was detected along the ridge from the head of Arkansas Creek east along Mineral Ridge to the head of Camas Creek in the Garnet Mountain Range east of Missoula, Montana.

Old infestation centers decreased in intensity on the Helena, Lewis and Clark, Gallatin, Flathead, and Colville National Forests.

SPRUCE BEETLE, *Dendroctonus rufipennis* (Kirby).--Spruce beetle infestations remained at low levels throughout the Region for the third consecutive year. Populations were confined to windthrown timber in localized areas on the Colville National Forest, Washington, and Stillwater State Forest in Montana. Brood development in windthrow was poor, indicating a low potential for activity in 1972.

FIR ENGRAVER, *Scolytus ventralis* LeConte.--Damage by the fir engraver has reached a low ebb in the Northern Region. The only new attacks observed were near Mason Butte, St. Joe National Forest, Idaho, and in Cabin and Hayden Creeks, Coeur d'Alene National Forest, Idaho.

PINE ENGRAVER, *Ips pini* (Say).--Small infestations were scattered over the ponderosa pine type of the Region. In two instances, the pine engraver was associated with mountain pine beetle attacks. These were south of St. Regis and north of Missoula, Montana, in Ninemile Creek. Other infestations occurred southeast of Big Arm, Montana; Addie, Idaho; in Brandy, Cougar, and Mink Creeks on the Colville National Forest, Washington; in Rock Creek on the Deerlodge National Forest, Montana; and in the Garnet Mountains east of Missoula, Montana. Localized group kills caused by pine engraver occurred in ponderosa pine stands on Blue Mountain, a portion of the Lolo National Forest south of Missoula. These infestations extended southward into low elevation ponderosa pine stands in the Bitter Root Valley. The mountain pine beetle and the western pine beetle, *Dendroctonus brevicomis* LeConte, were frequent secondary invaders in trees top killed by the pine engraver.

Pine engraver beetles invaded lodgepole pine windthrow resulting from a severe storm which occurred during June 1970 on the Hebgen Lake District of the Gallatin National Forest. Brood emerging from windthrown material killed a small number of standing trees near West Yellowstone, Montana.

Pine engraver beetle and six-spined engraver *Ips calligraphus* (Germar) infestations occurred in thinned stands, logged-over areas, and looper-defoliated ponderosa pine stands on the Northern Cheyenne Indian Reservation in southeastern Montana.

SEED AND CONE INSECTS

The western spruce budworm continued to be a serious pest of Douglas-fir cone crops in Montana. Budworm infestation in cones reduced the amount of seed available for natural regeneration in many areas east of the Continental Divide. Infestations were also detected in Engelmann spruce and subalpine fir cones (Figure 8). These are believed to be new host records for the western spruce budworm. Ponderosa pine cones were heavily infested with *Dioryctria abietivorella* (Grote), *D. auranticella* (Grote), and *Laspeyresia* sp. A cone beetle, *Conopthorus* sp. was quite damaging to ponderosa pine cones on the Custer National Forest and Crow Indian Reservation.

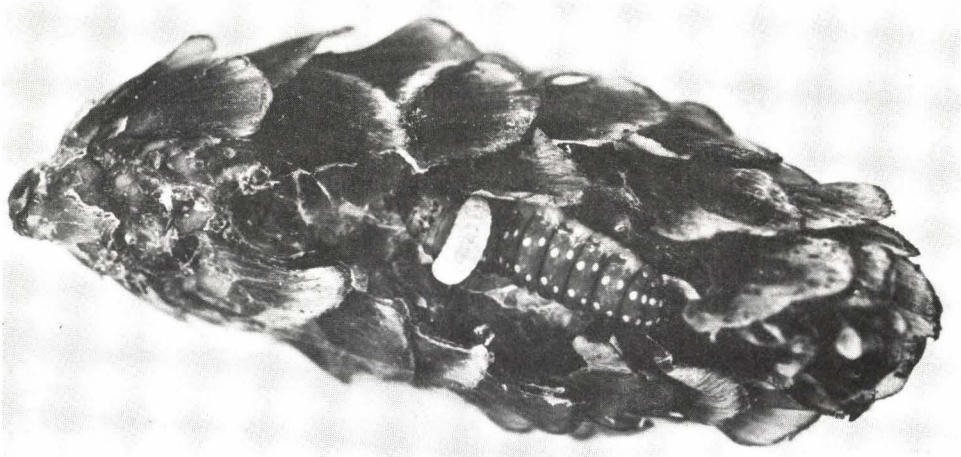

Figure 8.--Engelmann spruce cone infested by spruce budworm. Note ectoparasite in budworm larvae.

HARDWOOD DEFOLIATORS AND SHELTERBELT INSECTS

FOREST TENT CATERPILLAR, *Malacosoma disstria* Hubner.--This insect has been defoliating a mixture of hardwoods on the Fort Totten Indian Reservation and Sully's Hill National Game Reserve south of Devils Lake, North Dakota, for several years. In 1971, light feeding occurred on about 2,000 acres. Parasitized pupae and larvae killed by nuclear polyhedrosis virus and a fungus in the genus *Entomophthora* were abundant. The infestation is expected to decline in 1972.

SPRING CANKERWORM, *Paleacrita vernata* (Peck).--Siberian elm shelterbelts in North Dakota have been severely defoliated for the past several years. Several plantings south of Bottineau were completely stripped in 1971.

VARIABLE OAK LEAF CATERPILLAR, *Heterocampa manteo* (Dbldy).--Heavy defoliation of hardwoods in three separate areas of North Dakota resulted from epidemic populations of variable oak leaf caterpilla Bur oak and paper birch were defoliated on 2,760 acres in the Killdeer Mountains and 1,520 acres in the Saddle Buttes area of west central North Dakota. An additional 1,750 acres were heavily defoliated near Devils Lake. This included 900 acres of private lands along the lake's southwestern shore and 850 acres on the Sully's Hill National Game Preserve, Fort Totten Indian Reservatic and intermingled private lands. American basswood was the preferr host in this area with other hardwoods also receiving noticeable damage (Figures 9 and 10).

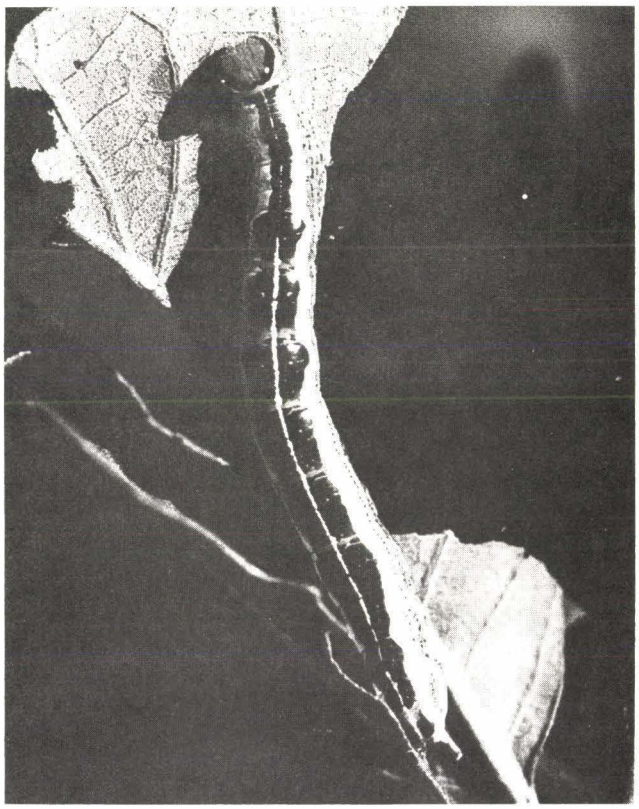

Figure 9.--Mature larvae of the variable oak leaf caterpillar *Heterocampa manteo* (Dbldy.).

Figure 10.--American basswood defoliated by variable oak leaf caterpillar near Devils Lake, North Dakota.

OTHER INSECTS

White pine weevil, *Pissodes strobi* (Peck) (=*engelmanni* Hopk.), damaged both natural and planted Engelmann spruce regeneration in many parts of the Region. Notable damage occurred in Emery Creek on the Flathead National Forest, Montana, and in a spruce plantation on the Nezperce National Forest, Idaho. A sawfly, *Neodiprion* sp., caused some localized feeding injury on lodgepole pine near Holland Lake, Flathead National Forest, and Lake Mary Ronan in Montana. Birch skeletonizer, *Bucculatrix canadensisella*, defoliated paper birch at Lake Metagoshe in the Turtle Mountains, North Dakota, and near Sandpoint, Idaho.